

Name \_\_\_\_\_

## STUDY GUIDE Chapter 7: Cell Structure and Function

1. \_\_\_\_\_ are the basic units of life, and \_\_\_\_\_ are specialized parts of a cell that perform specific functions. \_\_\_\_\_ is the jelly-like fluid inside cells.
2. Name 4 structures that are found in ALL cells.  
• \_\_\_\_\_ • \_\_\_\_\_  
• \_\_\_\_\_ • \_\_\_\_\_
3. Unicellular organisms like bacteria that lack a **nucleus** are called \_\_\_\_\_. Protists, fungi, plants, and animals are considered \_\_\_\_\_ because their DNA is enclosed within a **nucleus**.
4. The control center of the cell is the \_\_\_\_\_. It contains \_\_\_\_\_, which carry the cell's genetic information, a \_\_\_\_\_, which controls what moves into and out of the nucleus, and the \_\_\_\_\_, which manufactures ribosomes.
5. \_\_\_\_\_ store and move materials between organelles and the cell's surface. Plants have a large central \_\_\_\_\_ that stores water, salts, proteins, and carbohydrates (while those in animal cells are smaller). \_\_\_\_\_ contain digestive enzymes that clean up the cell and are typically found only in \_\_\_\_\_ cells.
6. The \_\_\_\_\_ helps cells maintain shape and is involved in movement of and with the cell. \_\_\_\_\_ form in animal cells to facilitate the movement of chromosomes during cell division. The \_\_\_\_\_ modifies, sorts, and packages proteins and lipids.
7. Proteins are produced at the \_\_\_\_\_. The internal membrane system that transports lipids and proteins is called the \_\_\_\_\_. The \_\_\_\_\_ has ribosomes attached to it, but the \_\_\_\_\_ does not have ribosomes.
8. Chemical energy from food is converted into ATP during respiration in the \_\_\_\_\_. Numerous folds of its inner membrane that increase the organelle's surface area to produce more ATP are called \_\_\_\_\_. Energy from sunlight is converted into chemical energy (glucose) in the \_\_\_\_\_. These photosynthetic organelles are found only in \_\_\_\_\_.
9. The \_\_\_\_\_ supports, shapes and protects prokaryotic and plant cells (but is not found in animal cells). The selectively permeable barrier that regulates what enters and leaves ALL cells is the \_\_\_\_\_. It contains a \_\_\_\_\_ layer of phospholipids.

10. The \_\_\_\_\_ or “head” end of phospholipids is polar and faces the water inside and outside of the cell because it is \_\_\_\_\_ or “water loving.” The \_\_\_\_\_ tails are nonpolar and face each other toward the center of the lipid bilayer because they are \_\_\_\_\_ or “water fearing.”

11. Diffusion, which is an example of \_\_\_\_\_ transport, is the movement of a solute from \_\_\_\_\_ to \_\_\_\_\_ concentration and therefore does NOT require \_\_\_\_\_. Active transport moves materials from \_\_\_\_\_ to \_\_\_\_\_ concentration and therefore DOES require \_\_\_\_\_.

12. In \_\_\_\_\_, molecules pass from high to low concentration through membrane channels. Osmosis is the diffusion of \_\_\_\_\_ across a selectively permeable membrane. The water moves from \_\_\_\_\_ to \_\_\_\_\_ concentration.

13. In a/an \_\_\_\_\_ solution, the concentrations of solutes and water are the same on both sides of the cell membrane, so the cell neither swells nor shrinks. In a/an \_\_\_\_\_ solution, there is a lower concentration of solutes and a higher concentration of water outside the cells, so water moves into the cell, potentially causing the cell to rupture, which is known as \_\_\_\_\_. In a/an \_\_\_\_\_ solution, there is a higher concentration of solutes and a lower concentration of water outside the cells, so water moves out of the cell, causing the cell to shrink, which is known as \_\_\_\_\_.

14. A sodium-potassium pump moves  $\text{Na}^+$  \_\_\_\_\_ cells and  $\text{K}^+$  \_\_\_\_\_ cells. Because the pump is moving the ions from low to high concentration, it requires \_\_\_\_\_ to provide the necessary energy for this method of active transport.

15. Explain the difference between each of the following

- endocytosis vs exocytosis
- phagocytosis vs pinocytosis

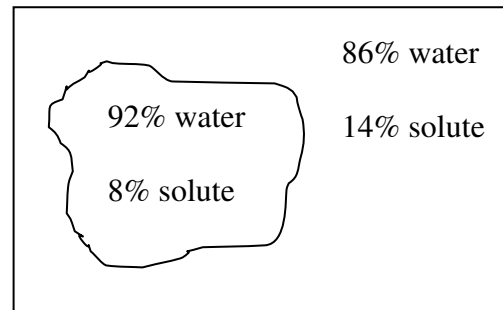
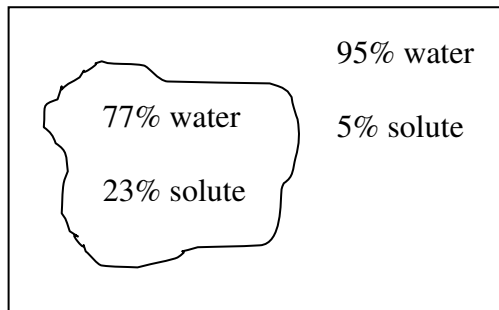
16. The relatively constant internal physical and chemical conditions maintained by organisms are referred to as \_\_\_\_\_. To maintain these conditions, unicellular organisms \_\_\_\_\_, \_\_\_\_\_ to the environment, transform \_\_\_\_\_, and \_\_\_\_\_.

17. In more complex multicellular organisms, cells are organized into \_\_\_\_\_, which are organized into \_\_\_\_\_, which are organized into \_\_\_\_\_.

18. Think back to the diffusion and osmosis lab, where the solution inside the model cell turned black overnight and the water in the beaker ended up pale yellow. Explain what happened and why by answering the following:

- Did the iodine move into the “cell”?
- What is your “proof”?
- Did the starch leave the “cell”?
- What is your “proof”?
- What can you conclude about the size of iodine molecules vs starch molecules?

19. Label each of the following cell environments as *hypertonic*, *hypotonic*, or *isotonic*. Then draw arrows showing the direction water moves (*out of the cell, into the cell, or both*)



20. Label each of the following organelles

- A.
- B.
- C.
- D.
- E.
- F.
- G.
- H.

